

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
3 February 2005 (03.02.2005)

PCT

(10) International Publication Number
WO 2005/010748 A1

(51) International Patent Classification⁷: **G06F 9/30, 9/35**

(21) International Application Number:
PCT/IB2004/051302

(22) International Filing Date: 27 July 2004 (27.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/490,954 30 July 2003 (30.07.2003) US

(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS, N.V.** [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **GOODHUE, Gregory** [US/US]; P.O. Box 3001, Briarcliff Manor, New York

10510-8001 (US). **KHAN, Ata** [US/US]; P.O. Box 3001, Briarcliff Manor, New York 10510-8001 (US). **DING, Zhimin** [US/US]; P.O. Box 3001, Briarcliff Manor, New York 10510-8001 (US).

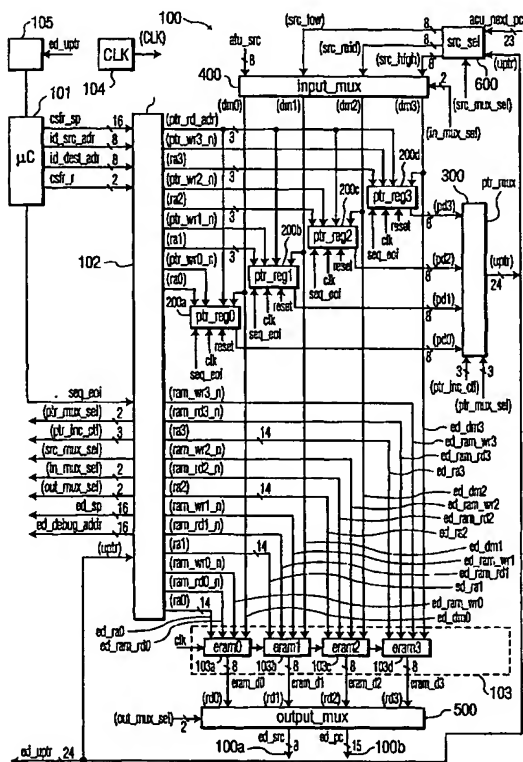
(74) Common Representative: **KONINKLIJKE PHILIPS ELECTRONICS, N.V.**; c/o Waxler, Aaron, P.O. Box 3001, Briarcliff Manor, NY 10510-8001 (NL).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: MEMORY ORGANIZATION ALLOWING SINGLE CYCLE POINTER ADDRESSING WHERE THE ADDRESS OF THE POINTER IS ALSO CONTAINED IN ONE OF THE MEMORY LOCATIONS



(57) Abstract: All Pointer-based accesses require first that the value contained in a pointer register (200a, 200b, 200c, 200d) to be read and then that value be used as an address to the appropriate region in random access memory (RAM) (104). As implemented today, this requires two memory read access cycles, each of which takes at least one clock cycle and therefore this implementation does not allow single cycle operation. In accordance with an embodiment of the invention, when an access is performed to pointer memory (103 a, 103b, 103c, 103d) to read the contents of a pointer, it is the shadow memory that is actually read and that returns the pointer value. Since the shadow memory is made up of pointer registers (200a, 200b, 200c, 200d), a read access involves multiplexing out of appropriate data for the pointer address from these pointer registers (200a, 200b, 200c, 200d) to form a target pointer address. This target pointer address is then used as an address to access RAM (104) without the overhead of a clock, since the register access is purely combinatorial and does not require clock-phase related timing as does access to the RAM (104).



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations* AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM,

ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

Published:

- *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.